

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (currently amended) A system for enabling queries to a database to be processed comprising:

a database system;

an application system for providing queries to a database system, the database system coupled to the application system via a first connection over a network;

a storage system having a shared volume to store results from queries made to the database system;

~~a storage system coupled to each of the application system and the database system, the storage system including a shared volume that can be accessed by the application system via a path between the storage system and the application system and by the database system via a path between the storage system and the database system, the shared volume storing results from queries made to the database system; and~~

a first data path to provide a data connection between the storage system and the application system, wherein the application system can directly access query results on the storage system without communicating via the first connection;

a second data path to provide a data connection between the storage system and the database system, wherein the database system directly stores query results to the storage system via the second data path without communicating via the first connection; and

~~a return path selector coupled to the database system for selecting a return path over which to return the results from queries made to the database system, the return path selector selecting from among at least the first connection over the network or the path between the application system and the storage system without going through the first connection over the network~~first connection over the network or the first data path between the storage system and

the application system, wherein the return path selector determines a data path based upon one or more attributes of the query results.

2. (original) A system as in claim 1 further comprising a request path selector coupled to the application system for selecting a request path over which to send query data for requests made to the database system, the request path selector selecting from among at least the first connection or the storage system.

3. (original) A system as in claim 1 wherein the storage system is coupled to each of the application system and the database system using a switch.

4. (original) A system as in claim 3 wherein a database hub system is used to couple the application system and the database system.

5. (original) A system as in claim 1 wherein the results from the query have a size, and the return path selector chooses a return path based on the size of the results.

6. (original) A system as in claim 5 wherein the return path selector chooses a return path based on a prediction of the size of the results.

7. (original) A system as in claim 1 wherein the return path selector chooses a return path based on a measurement of throughput of the first connection.

8. (original) A system as in claim 1 wherein when the return path is chosen to be the storage system, the results are sent to the storage system as a file and an address in the storage system for the file is provided to the application system using the first connection.

9. (original) A system as in claim 1 wherein after the results are used by the application system, the application system designates the results as used, thereby enabling them to be erased from the storage system at a later time.

10. (original) A system as in claim 1 wherein after the query data is used by the database system, the database system reuses the query data for a further query.

11. (original) A system as in claim 8 wherein the file has associated therewith a key and the key is used to control access to the results.

12. (original) A system as in claim 11 wherein the file also has associated therewith a flag to indicate status of the file.

13. (original) A system as in claim 12 wherein the flag indicates at least one of whether the file is being written, is ready to be read, is being read, and is available to be deleted.

14. (previously presented) A system as in claim 10 wherein after the query data is used by the database system, the database system designates the query data as used, thereby enabling them to be erased from the storage system at a later time.

15. (canceled)

16. (original) A system as in claim 1 wherein the database includes a hub system for system coupled to each of the application system and the database system.

17. (currently amended) A system for enabling queries to a database to be processed comprising:

a database system;

an application system for providing queries to the database system coupled to the application system via a first connection over a network;

a storage system having a volume to store results from queries made to the database system;

~~a storage system coupled to each of the application system and the database system, the storage system including a volume that can be accessed by the application system via a path between the storage system and the application system and by the database system via a path between the storage system and the database system; and~~

a first data path to provide a data connection between the storage system and the application system, wherein the application system can directly access query results on the storage system without communicating via the first connection;

a second data path to provide a data connection between the storage system and the database system, wherein the database system directly stores query results to the storage system via the second data path without communicating via the first connection; and

a return path selector coupled to the database system for selecting a return path over which to return the results from queries made to the database system, the return path selector selecting from among at least the first connection over the network or the path between the application system and the storage system without going through the first connection over the network ~~first connection over the network or the first data path between the storage system and the application system, wherein the return path selector determines a data path based upon one or more attributes of the query results.~~

18. (original) A system as in claim 17 wherein the storage system is coupled to each of the application system and the database system using a switch.

19. (original) A system as in claim 18 wherein a database hub system is used to couple the application system and the database system.

20. (original) A system as in claim 17 wherein the query data have a size, and the request path selector chooses a request path based on the size of the query data.

21. (original) A system as in claim 1 wherein when the request path is chosen to be the storage system, the query data are sent to the storage system as a file and an address in the storage system for the file is provided to the database system using the first connection.

22. (original) A system as in claim 17 wherein the file has associated therewith a key and the key is used to control access to the results.

23. (original) A system as in claim 17 wherein the file also has associated therewith a flag to indicate status of the file.

24. (original) A system as in claim 17 wherein the flag indicates at least one of whether the file is being written, is ready to be read, is being read, and is available to be deleted.

25. (original) A system as in claim 17 further comprising a return path selector coupled to the database system for selecting a return path over which to return results from queries made to the database system, the return path selector selecting from among at least the first connection or the storage system.

26. (original) A system as in claim 25 wherein the results from the query have a size, and the return path selector chooses a return path based on the size of the results.

27. (currently amended) A system as in claim [[1]]17 wherein when the return path is chosen to be the storage system, the results are sent to the storage system as a file and an address in the storage system for the file is provided to the application system using the first connection.

28. (currently amended) A system for enabling queries to a database to be processed comprising:

a database system;

an application system for providing queries to the database system coupled to the application system via a first connection over a network, the application system including a database access system, and the database system including a gateway system;

a storage system having a shared volume to store results from queries made to the database system;

~~a storage system coupled to each of the application system and the database system, the storage system including a shared volume that can be accessed by the application system via a path between the storage system and the application system and by the database~~

~~system via a path between the storage system and the database system, the shared volume storing results from queries made to the database system, and;~~

a first data path to provide a data connection between the storage system and the application system, wherein the application system can directly access query results on the storage system without communicating via the first connection;

a second data path to provide a data connection between the storage system and the database system, wherein the database system directly stores query results to the storage system via the second data path without communicating via the first connection; and

the gateway system including a return path selector for selecting a return path over which to return the results from queries made to the database system, the return path selector selecting from among at least the ~~first connection over the network or the path between the application system and the storage system~~ first connection over the network or the first data path between the storage system and the application system, wherein the return path selector determines a data path based upon one or more attributes of the query results.

29. (original) A system as in claim 28 wherein the gateway system includes a return path selector for selecting a return path over which to return results from queries made to the database system, the return path selector selecting from among at least the first connection or the storage system.

30. (currently amended) A system for enabling queries to a database to be processed comprising:

a database system;

an application system for providing queries to the database system coupled to the application system via a first connection over a network, the application system including a database access system, and the database system including a gateway system;

a storage system having a volume to store results from queries made to the database system;

~~a storage system coupled to each of the application system and the database system, the storage system including a volume that can be accessed by the application system via~~

~~a path between the storage system and the application system and by the database system via a path between the storage system and the database system, and;~~

a first data path to provide a data connection between the storage system and the application system, wherein the application system can directly access query results on the storage system without communicating via the first connection;

a second data path to provide a data connection between the storage system and the database system, wherein the database system directly stores query results to the storage system via the second data path without communicating via the first connection; and

the database access system including a request path selector for selecting a request path over which to send data for queries made to the database system, the request path selector selecting from among at least the first connection over the network or the first data path between the application system and the storage system.

31. (currently amended) A system for enabling queries to a database to be processed comprising:

a database system;

an application system for providing queries to the database system, the database system coupled to the application system via a communications network connection;

a switch coupled to each of the database system and the application system;

a storage system coupled to the switch, the storage system having a volume to store results from queries made to the database system;

~~a storage system coupled to the switch, the storage system including a shared volume that can be accessed by the application system via a path between the storage system and the application system via the switch and by the database system via a path between the storage system and the database system via the switch, the shared volume storing results from queries made to the database system; and~~

a first data path to provide a data connection between the storage system and the application system, wherein the application system can directly access query results on the storage system without communicating via the first connection;

a second data path to provide a data connection between the storage system and the database system, wherein the database system directly stores query results to the storage system via the second data path without communicating via the first connection; and

a return path selector coupled to the database system for selecting a return path over which to return the results from queries made to the database system, the return path selector selecting from among at least the ~~first connection over the network or the path between the application system and the storage system without going through the first connection over the network~~ ~~first connection over the network or the first data path between the storage system and the application system, wherein the return path selector determines a data path based upon one or more attributes of the query results.~~

32. (original) A system as in claim 31 further comprising a request path selector coupled to the application system for selecting a request path over which to send query data for requests made to the database system, the request path selector selecting from among at least the communications network connection or the switch.

33. (currently amended) In a system having a query provider which provides queries to a database system connected to the query provider by a first connection over a network, the query provider and the database system being each coupled to a storage system via different paths, a method of returning results to the query provider comprising storing results from queries made to the database system in the storage system at an address which can be accessed separately by the query provider via a second connection independent of the network and by the database system via a third connection independent of the network, and sending the address of the results in the storage system via the first connection over the network to the query provider.

34. (original) A method as in claim 33 further comprising:
generating a key for the results to identify their location; and
sending the key over the network to the query provider.

35. (original) A method as in claim 34 further comprising a step, at the query provider, retrieving the results from the storage system.

36. (original) A method as in claim 34 further comprising encrypting at least one of the key and the results.

37. (original) A method as in claim 33 wherein the query provider provides query data to the database by storing the query data in the storage system at a location and sending information about the location over the first connection to the database system.

38. (original) A method as in claim 28 further comprising, at the database system, the steps of:

retrieving the query data from the storage system; and
using the query data to obtain the results.

39. (original) A method as in claim 33 further comprising providing a flag associated with the results to indicate whether the results are ready to be read by the query provider.

40. (original) A method as in claim 37 further comprising providing a flag associated with the results to indicate whether the results have been read by the query provider.

41. (currently amended) In a data storage system connected to an application system and a database system via a network, a method comprising:

receiving from the database system over the network, results of execution of queries, the queries being sent to the database system by the application system;

storing the results of execution of queries in a storage area that the database system and the application system can access separately via separate connections to the storage area, the separate connections comprising:

a first data path to provide a data connection between the storage system and the application system, wherein the application system can directly access query results on the storage system without communicating via the first connection; and

a second data path to provide a data connection between the storage system and the database system, wherein the database system directly stores query results to the storage system via the second data path without communicating via the first connection; [[and]]

determining a return path for the results of the execution of queries to the application system based upon one or more attributes of the results of the execution of queries; and

sending, in response to a request from the application system, the results of execution of queries to the application system over the network if the network is determined to be the return path or returning an address in the shared volume for the results of the execution of the query if the shared volume is determined to be the return path.

42. (currently amended) ~~In a system having an application system, a database system connected to the application system via a first connection, and a data storage system connected to the application system via a second connection, a method, comprising the steps of:~~
In a system having an application system, a database system connected to the application system via a first network connection, a return path selector coupled to the database system for selecting a return path over which to return the results from queries made to the database system, and a data storage system connected to the application system via a first data path and connected to the database system through a second data path, the first data path providing a data connection between the data storage system and the application system through which the application system can directly access query results on the data storage system without communicating via the first connection, and the second data path providing a data connection between the data storage system and the database system through which the database system directly stores query results to the data storage system via the second data path without communicating via the first connection, a method, comprising the steps of:

sending a query from the application system to the database system by using the first network connection over a network;

selecting a return path over which to return the results from queries made to the database system from among at least the first network connection or the first data path between the storage system and the application system, wherein the return path selector determines the return path based upon one or more attributes of the query results;

storing a result of execution of the query in a shared volume of the data storage system that can be accessed by the application system via the first data path and by the database system via the second data path; and

obtaining at the application system, the result of execution of the query from the storage system via the [[second connection]]first data path without going through the first connection over the network.

43. (original) The method of claim 42, wherein the first connection is a Local Area Network, and wherein the second connection is a Storage Area Network.